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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,030	01/31/2002	David A. Pruitt	LT-151	5212

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EXAMINER

HUYNH, ANDY

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 04/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/066,030

Applicant(s)

PRUITT, DAVID A.

Examiner

Andy Huynh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☒ Claim(s) 9,25,39 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. In Election/Restrictions Response, Applicant has elected the invention of Group I (claims 1-45) without traverse dated March 7, 2003, in Paper No. 7 is acknowledged. Accordingly, claim 46 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 35 § 1.142(b) and MPEP § 821.03. Applicant has the right to file a divisional application covering the subject matter of the non-elected claim 46, drawn to a method of manufacturing a leadframe for an integrated circuit.

Information Disclosure Statement

2. This office acknowledges receipt of the following items from the applicant: Information Disclosure Statement (IDS) filed on October 23, 2002 and made of record as Paper No. 5. The references cited on the PTOL 1449 form have been considered.

Claim Objections

3. Claims 9, 25, 39 and 43 are objected to because of the following reasons.

In claims 9, 25, 39 and 43, in the phrase "a least a portion of the die paddle," "a least" is misspelled. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 9, 15-17, 19-21, 23-24 and 43-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinsman et al. (USP: 6,075,283, hereinafter "Kinsman").

Regarding claim 1, Kinsman discloses in Figs. 4-4B and 5-5C a leadframe 30 for use in a integrated circuit package 38, the leadframe comprising:

a frame 32 lying in a first plane;

a plurality of leads 40 disposed substantially in the first plane, each of said leads having an end attached to the frame;

a die paddle 34, lying in a second plane which is substantially parallel to the first plane and is offset from the first plane by a given distance D1;

first 64AL and second 64AR support members that are connected between one end of the die paddle and the frame, the first and second support members being in the same plane as each other and being substantially parallel to the end of the die paddle to which they are connected; and

third 64BL and fourth 64BR support members that are connected between the other end of the die paddle and the frame, the third and fourth support members being in the same plane as each other and being substantially parallel to the end of the die paddle to which they are connected (column 5, line 55-column 7, line 7).

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Regarding claim 2, Kinsman discloses the leadframe wherein an offset angle A3 is formed between the plane of the first and second support members and a line that is perpendicular to the first plane where the first member is connected to the die paddle, the offset angle can be from 30 to 45 degrees (column 6, lines 57-61).

Regarding claim 9, Kinsman discloses in Figs. 4-4B and 5-5C a leadframe 30 for an integrated circuit, comprising:

- a frame 32 having a plurality of sides defining an interior portion of the frame, at least a portion of the frame lying in an upper horizontal plane, the horizontal plane defining a vertical axis perpendicular thereto;

- a plurality of leads 40, each of the plurality of leads having an outer end attached to the frame and an inner end within the interior portion, at least one of the plurality of leads disposed substantially along the upper horizontal plane;

- a die paddle 34, at least a portion of the die paddle lying in a lower horizontal plane within the interior portion;

- a first support member 64AL connecting the frame to the die paddle, the first support member having a proximal end and a distal end defining a first line 68A segment therebetween, wherein the proximal end is connected to the frame on a first side thereof at a first frame attach point, wherein the distal end is connected to the die paddle at a first die paddle attach point, the first side of the frame defining a horizontal axis perpendicular thereto; wherein

- an offset angle A3 between the first line segment and the vertical axis, projected onto a first vertical plane that is parallel to the horizontal axis, is less than 45 degrees, wherein a

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positive offset angle corresponds to extension of the distal end of the first support member toward the interior portion (column 5, line 55-column 7, line 7).

Regarding claims **15-16**, Kinsman discloses in Figs. 4-4B and 5-5C the leadframe wherein the first support member, projected on to a second vertical plane that is perpendicular to the first vertical plane, extends at a 45 degree angle from the vertical axis; wherein the distal end of the first support member extends away from the center of the interior portion in a projection on the second vertical plane (column 6, lines 42-67).

Regarding claim **17**, Kinsman discloses in Figs. 4-4B and 5-5C the leadframe wherein the frame has a substantially rectangular shape.

Regarding claims **19 and 20**, Kinsman discloses in Figs. 4-4B and 5-5C the leadframe further comprising a second support member 64AR connected to the frame at a second frame attach point on the first side of the frame and connected to the die paddle at a second die paddle attach point opposite the first die paddle attach point, wherein the second support member, projected on to the second vertical plane, extends at a 45 degree angle from the vertical axis; the leadframe further comprising a second support member 64AR connected to the frame at a second frame attach point on the side of the frame opposite the side on which the first frame attach point is located, and connected to the die paddle at a second die paddle attach point on the side of the die paddle opposite the side on which the first die paddle attach point is located, the second support member thereby connecting the frame to the die paddle (column 6, line 42-column 7, line 7).

Regarding claims **21, 23 and 24**, Kinsman discloses in Figs. 4-4B and 5-5C the leadframe wherein the second support member has substantially the same shape as the first

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support member; wherein each of the plurality of leads lies along the upper horizontal plane for substantially the entire length of the lead; and wherein substantially all of the frame lies on the upper horizontal plane and substantially all of the die paddle lies on the lower horizontal plane.

Regarding claims **43 and 44**, Kinsman discloses in Figs. 4-4B and 5-5C an integrated circuit package comprising:

a frame 32 having a plurality of sides defining an interior portion of the frame, at least a portion of the frame lying in an upper horizontal plane;

a plurality of leads 40, each of the plurality of leads having an outer end attached to the frame and an inner end within the interior portion, at least one of the plurality of leads disposed substantially along the upper horizontal plane;

a die paddle 34, at least a portion of the die paddle lying in a lower horizontal plane within the interior portion;

an integrated circuit die 36 disposed on the die paddle, the die having a plurality of bond pads 80 on an active face thereof;

a first support member 64AL connecting the frame to the die paddle, the first support member having a proximal end and a distal end, wherein the proximal end is connected to the frame on a first side thereof at a first frame attach point, wherein the distal end is connected to the die paddle at a first die paddle attach point;

a bond wire 82 electrically connecting one of the bond pads on the die to the frame, wherein one end of the bond wire is attached to the frame at some point on the upper horizontal plane; and

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wherein another end of the bond wire is attached to the die, thereby, forming a direct electrical connection between the die and the frame (column 5, line 55-column 7, line 7).

Regarding claim 45, Kinsman discloses in Figs. 4-4B and 5-5C a leadframe 30 for an integrated circuit, comprising:

a frame 32 having a plurality of sides defining an interior portion of the frame, at least a portion of the frame lying in an upper horizontal plane;

a plurality of leads 40, each of the plurality of leads having an outer end attached to the frame and an inner end within the interior portion;

a die paddle 34, at least a portion of the die paddle lying in a lower horizontal plane within the interior portion;

a pair of support members 64A, 64B connecting the frame to the die paddle, each of the pair of support members having a proximal end and a distal end, wherein the proximal end is connected to the frame on a first side thereof at a corresponding pair of frame attach points and wherein the distal end is connected to the die paddle at a corresponding die paddle attach point; wherein the distal ends of the pair of support members extend away from a vertical plane that is perpendicular to the first side of the frame and that passes between the pair of support: members (column 5, line 55-column 7, line 7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims **3-8, 10-14, 18 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al. (USP: 6,075,283, hereinafter "Kinsman").

Regarding claims **3-7, and 10-14**, Kinsman discloses the claimed invention except for the leadframe wherein the offset angle is less than 30, 20, 10, 5 or 0 degrees. It would have been an obvious matter of design choice to form the offset angle is less than 30, 20, 10, 5 or 0 degrees, since applicant has not disclosed that the offset angle is less than 30, 20, 10, 5 or 0 degrees solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with any angle less than 45 degrees as applicant discloses in the specification on page 12, lines 3-5.

Regarding claim **8**, Kinsman discloses in Figs. 4-4B and 5-5B the leadframe further comprising:

- an integrated circuit die 36;
- at least one bond pad mounted to said die 80; and
- a bond wire 82 mounted between said bond pad and the frame.

Regarding claim **18**, Kinsman discloses the claimed invention except for the leadframe wherein the distal end of the first support member is connected-to the die paddle proximate to a corner thereof. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to arrange the distal end of the first support member connected-to the die paddle proximate to a corner, since it has been held that rearranging parts of an invention involves only routine skill in the art.

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Regarding claim **22**, Kinsman discloses in Figs. 4-4B and 5-5C the leadframe further comprising third 64BL and fourth 64BR support members connected to the frame on the side of the frame opposite the side on which the first and second frame attach points are located, and wherein the pair of first and second support members and the pair of third and fourth support members are disposed symmetrically about a vertical plane of symmetry running through the center of the interior portion and perpendicular to the first vertical plane, except for wherein the third and fourth support members are each connected to the die paddle proximate to corresponding corners thereof. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to arrange the third and fourth support members are each connected to the die paddle proximate to corresponding corners, since it has been held that rearranging parts of an invention involves only routine skill in the art.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims **25-38 and 39-42** are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim **25** recites the limitation "the offset angle" in "the offset angle between the first line segment and the vertical axis." There is insufficient antecedent basis for this limitation in the claim.

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Claims **26-30** are rejected for incorporating the defects of the parent claim. And claims **31-38** are rejected due to the rejection of the parent claim.

Claim **39** recites the limitation "the offset" in "wherein the offset between the die and the frame." There is insufficient antecedent basis for this limitation in the claim.

Claims **40-41** are rejected for incorporating the defects of the parent claim. And claim **42** is rejected due to the rejection of the parent claim.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Ahmad (USP: 6,500,697 B2), Ahmad (USP: 6,331,448 B1), Ahmad (USP: 6,329,705 B1), Kinsman et al. (USP: 6,246,110 B1), and Abbott et al. (USP: 5,012,309) are cited as of interest.

8. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy Huynh, (703) 305-0089. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. The examiner's supervisor, David Nelms can be reached on (703) 308-4910. The Fax number for the organization where this application or proceeding is assigned is (703) 308-7724. Any inquiry of a general nature or relating to the -

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status of this application or proceeding should be directed to the receptionist whose phone number is (703) 308-0956.



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**HOAI HO
PRIMARY EXAMINER**